IEPR Committee Workshop on the Cost of Electricity Generation.

Levelized Costs of Generation Model – Renewable Energy, Clean Coal and Nuclear Inputs.

Whilst OPD is acutely aware of the challenges associated with deriving "snap shot" costs for differing generation technologies we feel we must comment on a number of the assumptions underpinning the Commissions evaluation of likely Wave Energy outputs.

With actual projects underway in Europe, OPD is widely considered to be the market leader in wave energy technology. Additionally when it comes to forecasting machine outputs from site wave energy data, we have an in house capability of the highest order.

With a stated capacity rating of 750kW it is clear to all in the industry that the Navigant analysis is based on our Pelamis technology making our comments all the more relevant to this exercise.

Clearly without knowledge of the specific assumptions made it is impossible to reverse engineer the resulting figures conveyed in the Commission's comparative cost document. None the less a number of values present themselves as worthy of further investigation.

Capital Cost

The Navigant figures used appear to be based on the cost of one prototype machine in 2006; the notes section states "The 2006 number assumes a small 750kW pilot plant" However the notes then appear to contradict this by stating "assumes 82% progress ratio with worldwide production capacities of 100MW in 2010". If so capital costs should be far below the figure presented and used in this analysis. It is well known that for many technologies the cost of a one off prototype can be 6-8 times the serial production cost. We do not suggest such a reduction but we contend that to have a fair comparison between technologies that is any way useful for policy makers - like has to be compared with like. In this regard we believe a fairer comparison would be a scenario based on a commercial scale project (eg 30MW and above) built in the period to 2012.

Net Capacity Figure.

The report conveys a net capacity figure of 15%. As the Navigant report itself declares capacity figures will vary with site conditions. Our own investigations indicate that there are considerable differences in wave resource levels with Californian waters. Figures for the south of the State can be particularly low whereas figures to the north are comparable to those found in areas of Europe where projects are already underway. We shall come back to this matter later. By way of example if you consider actual NOHA Buoy data waters for the waters off Humbolt County we would anticipate a gross capacity figure of around 25% 5 km from the coast. The number increases as you go further offshore. We would expect availability to be >90% increasing to wind turbine levels as experience is gained. So we would

conclude that a more representative figure currently for Net Capacity would be 23% for first projects (compare with first wind projects in California with capacity factors of the order of 13%). We anticipate further developments in our technology will yield significant improvements in the not too distant future. As a further comment the net capacity figures of 34% and 17.5% for wind and solar appear to be relatively high.

Taxes.

We would question the fairness of levelling the current full tax burden on wave whereas with the exception of small scale hydro all other renewables benefit in no small way from tax incentive schemes. It is anticipated that Congress will grant a number of incentives to early wave projects in the current legislative session. This appears to be a distortion in evaluating relative costs between technologies.

Ad Valorem Costs.

As we understand it this is effectively an "import" tax on goods imported into the State. It makes both political and economic sense to look to build a high percentage of the overall machine local to the actual project site. With a project of some scale it we would expect to place major orders in California thus avoiding a large part of any such costs.

Capital and Financing.

We would like to better understand how this figure was derived, particularly in connection with finance cost assumption. In the absence of this information we would like to make the following observations. Taking a project size of a single Pelamis machine rated at 750kW is unrealistic – none of the utilities with whom we are working (Iberdrola/ScottishPower, E.on, Enersis/Babcock and Brown) would consider building such a small scale project and negates the obvious benefits of scale, particularly when comparing other technologies at much larger scale (eg Nuclear at 1000MW and wind at 50MW). At present it appears that the 'one machine project' costs include all fixed costs associated with a project (eg permitting and other balance of plant items such as undersea cabling) which is clearly a poor comparison even with a 10 machine project. Clearly a 1MW gas turbine project would also have rather high fixed costs and hence a very high levelised cost of energy production.

As a final reality check projects in Europe are already underway with support tariffs of a magnitude one fifth to a quarter of the 1200 $/MWh figures conveyed in the CEC report.

OPD would be delighted to work directly with Navigant and the CEC to derive more representative figures as there is serious concern that the current figures do the industry a gross disservice.

Des McGinnes
Business Development Manager
Ocean Power Delivery Ltd
Mobile +44 (0)7843092790